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(54) Tibial resector guide

Führer für Schienbeinosteotomie

Guide pour l'ostéotomie du tibia

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(73) Proprietors:
- **Bristol-Myers Squibb Company**
  New York, N.Y. 10154 (US)
- **Petersen, Thomas D., M.D.**
  San Diego, California 92120 (US)

(72) Inventors:
- **Johnson, Todd. S.**
  Pierceton, IN 46562 (US)
- **Lane, Richard Alan**
  Fort Wayne, IN 46804 (US)
- **Petersen, Thomas D., M.D.,**
  Alvarado Orth.Med.Group
  San Diego, CA 92120 (US)
- **Nichols, Chuck,**
  KDA Ind. Design Consultants
  Addison, IL 60101 (US)
- **Howard, John R.,**
  KDA Ind. Design Consultants
  Addison, IL 60101 (US)

(74) Representative: **Mays, Julie**
Bristol-Myers Squibb Company,
Patent Department,
Swakeleys House,
Milton Road
Ickenham, Uxbridge UB10 8NS (GB)

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Description

BACKGROUND OF THE INVENTION

This invention relates to resector guides as used in orthopaedic surgery and has specific relevance to a tibial resector guide having a guide head which may be selectively angled in an anterior-posterior plane.

BACKGROUND OF THE INVENTION

During the surgical procedure to implant a knee prosthesis, the proximal end of the tibia must be cut to accommodate the tibial implant. Proper fit and function of the knee prosthesis will depend in large part on the accuracy of the tibial cut. Therefore, it is not uncommon for a surgeon to place a cutting guide in close proximity with the proximal end of the tibia. Prior art cutting guides typically include a head which accommodates the bone saw blade. The surgeon passes the saw blade along the guide head to resect a proximal portion of the tibia. Tibial resector guides, in general, are not new. A number of such guides have been developed and patented throughout the years.

The Woolson patent U.S. 4,841,975 discloses a tibial resector guide having a telescoping rod carrying a cutting head at its upper end. The cutting guide is adjustable relative to the telescoping rod by a pair of oppositely positioned thumb screws. The guide may be aligned with the mechanical axis of the joint by use of a slidable plate.

Poggie et al., U.S. Patent No. 5,002,547 and Petersen U.S. Patent No. 4,524,766 disclose tibial resector guides wherein the cutting guides are fixed to a telescoping rod.

Dunn et al., U.S. Patent No. 4,759,350, discloses a tibial resector guide having a fixed head carried by a telescoping rod. A separate pinning strap is carried by the rod adjacent the head. The strap 106 is fixed to the telescoping rod.

Fargie et al., U.S. Patent No. 4,736,737, discloses a tibial resector head connected to an intramedullary rod and shiftable in a longitudinal direction only. Angular adjustment is not provided.

Petersen, U.S. Patent No. 4,773,407, discloses an instrument for guiding the resection of a distal femur having a head which is pivotally carried by a guide rod. The pivotal head is for the purpose of providing alignment and not posterior slope. The guide rod carries a rotating rod having holes therethrough for accommodating a securement pin.

EP-A-415 837 concerns a tibial resector guide according to the features of the preamble of Claim 1. Adjustment of the cutting head is via a pin which passes through one of a variety of positions in the head into the tibial support.

SUMMARY OF THE INVENTION

This invention provides for a tibial resector guide having an angularly adjustable head controlled by a thumb actuated slide mechanism as recited in claim 1. The head may be positioned in a plurality of predetermined angular orientations in the anterior-posterior plane. The head guide includes angled side walls which permit the guide to have a narrow anterior aperture yet allow the saw blade to completely pass through the tibia. Further, the tibial resector of this invention includes a length adjustment mechanism on the head for providing small height adjustments for positioning the cutting guide. The length adjustment member includes an enlarged thumb wheel for ease of operation. A pinning fork is pivotally connected to the adjustment member and extends upwardly adjacent the cutting guide. The pinning fork permits the surgeon to pin the upper end of the instrument to the patient's leg preventing movement of the instrument during resection. After pinning, the cutting guide may be further adjusted in height by rotating the length mechanism. The resector guide further includes a sliding ankle adjustment to provide proper alignment of the guide with the mechanical axis of the joint.

Accordingly, it is an object of the invention to provide for a novel tibial resector guide.

Another object of the invention is to provide an adjustable resector guide head.

Another object of the invention is to provide for a tibial resector having a height adjustment member for providing small increments in height.

Still another object of this invention is to provide for a tibial resector guide having a narrow aperture cutting guide with outwardly inclined side walls to provide an enlarged cutting area.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of the tibial resector of this invention.

Fig. 2 is a rear elevational view of the tibial resector of this invention.

Fig. 3 is a side elevational view of the tibial resector of the invention.

Fig. 4 is a fragmented side elevational view of the invention illustrating the head in its fully angled position relative to the shaft.

Fig. 5 is a fragmented sectional view taken along line 5-5 of Fig. 3.

Fig. 6 is a fragmented sectional view taken along line 6-6 of Fig. 2.

Fig. 7 is a fragmented sectional view taken along line 7-7 of Fig. 3.

Fig. 8 is a fragmented elevational view of the head, pinning fork and adjustment mechanism with the pinning fork fully spaced from the guide head.

Fig. 9 is an exploded view of the length adjustment

mechanism of the invention.

Fig. 10 is an exploded view of the head of the tibial resector guide of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The preferred embodiment herein disclosed is not intended to be exhaustive or to limit the invention to the precise form disclosed. Rather, it is chosen and described in order to best explain the invention so that others skilled in the art can utilize its teachings.

Referring now to the drawings, tibial resector guide 10 includes a head 12 and an ankle adjustment mechanism 14 interconnected by a telescoping rod 16. Rod 16 is adjustable in length and is maintained at a fixed position by turning thumb wheel 18 to cause a screw (not shown) to engage the inner rod 20. Inner rod 20 includes a flattened side 22 for contact with the screw (not shown) to prevent rotation of inner rod 20 relative to outer tube 24. The distal tip of inner rod 20 includes a transverse bore 21.

Head 12 includes a cutting guide 26 having upper and lower walls 30, 32 and side walls 34 defining a slot 28 for accommodating the blade of a bone saw (not shown). An arcuate recess is formed in the posterior side of upper and lower walls 30, 32 for accommodating the proximal portion of a patient's lower leg adjacent the knee joint. Side walls 34 of the guide diverge from the anterior side toward the posterior side of the upper and lower walls such that the opening of slot 28 on the anterior side of the guide is longitudinally smaller than the opening of the slot on the posterior side of guide 26. This feature permits the use of a full stroke cutting guide 26 allowing the entire tibia to be cut through in one pass within the confined area of the surgical site. A plurality of pinning apertures 36 are provided extending from the bottom surface of the guide 26. Pinning apertures 36 accommodate a fixation pin during surgery to secure guide 10 against movement during resection. A pair of legs 38 extend at an angle from lower wall 32 of guide 26 and each include through bores 37, 39.

Head 12 further includes a posterior slope adjustment mechanism 40 for selectively angling the cutting guide 26 relative to rod 16. Slope adjustment mechanism 40 includes a fixed body 42 having a downwardly extending leg 44. The distal portion of leg 44 includes screw threads 45. A longitudinally aligned slot 43 is formed through leg 44 and threads 43. A central blind bore 47 extends inwardly into leg 44. Body 42 is longitudinal in dimension and has a dovetail slot 46 formed in one side wall thereof. A plurality of indentions 48 are formed in the inner wall of the dovetail slot. A slot 50 is formed through body 42 in communication with dovetail slot 46. Body 42 terminates in a protrusion 52 having a bore therethrough. Slope adjustment mechanism 48 further includes a slide 54 accommodated within dovetail slot 46 and slidable between a fully retracted position of Figs 1, 2, 3, and 8 and the fully extended position of Fig. 4. Slide 54 includes a slot 56 positioned at an angle with the slide as illustrated. A thumb bar 58 extends outwardly from slide 54 to provide access to the user. As best illustrated in Fig. 5, slide 54 includes a blind bore 60 which carries a helical spring 62 and a ball stop 64. As illustrated in Fig. 5, spring 62 urges ball stop against the inner wall of dovetail slot 46. As slide 54 is shifted between its extremes, ball stop 64 seats within indentations 48 to impart a positive snap feel to the slide.

Guide 26 is pivotally connected to the slope adjustment mechanism by a screw 68 press threaded through a pair of aligned openings in legs 38 of guide 26 and the bore of knob 52. A screw 66 interconnects the distal ends of legs 38 and is accommodated within slot 56 of slide 54 and slot 50 of fixed body 42. As slide 54 is shifted between its extreme positions, screw 66 rides within the angled slot 56 causing the cutting guide 26 to pivot about pin 68 to thereby vary the angle of inclination of the slot 28 relative to the fixed body 42.

Head 12 also includes a length adjustment mechanism 70 which provides small adjustments in the overall length of the tibia resector guide 10. Length adjustment mechanism 70 (hereinafter referred to as LAM 70) includes a cap 72 having a lower depending shaft with external threads and a central bore dimensioned to loosely accommodate leg 44. LAM 70 further includes a cylindrical body 74 having a central longitudinal bore stepped in diameter to threadibly accommodate cap 72 at one end and leg 44 at the opposite end. As cylindrical body 74 rotates relative to leg 44, body 74 travels along threads 45 of leg 44. The lower depending shaft of cap 72 and the central bore of cylindrical body 74 are formed such that when cap 72 is fully screwed into cylindrical body, a ring shaped cavity 76 is formed therebetween. The distal end of inner rod 20 is slidably positioned within the central blind bore 47 of leg 44. A pin 78 is inserted into bore 21 of rod 20 and extends outwardly therefrom for slidable accommodation within slot 43 of leg 44.

Finally, head 12 includes a pinning fork 80 pivotally connected to a collar 82 loosely carried by cylindrical body 74 such that the collar remains rotationally stationary as body 74 rotates. Pinning fork 80 is slightly arcuate in its side view and includes a pair of arms 86 each of which terminate in a pinning tube 88. Arms 86 are positioned laterally adjacent legs 38 of cutting guide 26. The distal ends of arms 86 are accommodated within recesses formed in the underneath side of lower wall 32 as shown.

Ankle adjustment mechanism 14 includes an ankle contacting member 90 slidably carried by the foot 94 of a shaft 92. A threaded rod 96 is accommodated within shaft 92 and causes a restrictive interference between member 90 and foot 94 when rod 96 is rotatably extended toward member 90. Member 90 includes a pair of legs 98 spaced from one another for straddling the patients ankle. Shaft 92 is carried by outer tube 24

or telescoping rod 16 and is selectively lockable in position relative to tube 24 by an interfering locking device 100.

In use, tibial resector guide 10 is positioned adjacent the patient's lower leg such that ankle adjustment mechanism 14 is adjacent the patient's ankle with legs 98 straddling the ankle. Thumb wheel 18 is rotated to release inner rod 16 and the head 12 is positioned in such that cutting guide 26 is in the approximate position for the tibial cut predetermined by the surgeon. The ankle adjustment mechanism 14 is adjusted so as to align device 10 with the mechanical axis of the knee joint for proper installation of the tibial component. Telescoping rod 16 is positioned in parallel with the tibia. The particular reasons for adjusting the ankle adjusting mechanism 14 are well known in the industry and need not be discussed here. After mechanism 14 has been appropriately adjusted and the cutting guide is at least approximately in position relative to the desired cut line, the surgeon may insert a stabilizing pin through each pinning tube 88 of the pinning fork and into the tibia.

To precisely align slot 28 with the intended cut line, the surgeon rotates cylindrical body 74 of LAM 70. As mentioned previously, each longitudinal end of pin 78 is seated within the ring-like cavity formed between cap 72 and body 74 of LAM 70 with the remaining portion of the pin carried within bore 21 of inner rod 20. Pin 78 acts as an anchor to longitudinally fix the combination of cylindrical body 74 and cap 72 to inner rod 20. Therefore, with leg 44 threadibly accommodated within cylindrical body 74, rotation of cylindrical body 74 causes leg 44 to travel longitudinally within the cylindrical body 74. Pin 78 accommodated within slot 43 of leg 44 defines the longitudinal extremes the leg's shifting relative to rod 20. A longitudinal shift in leg 44 shifts cutting guide 26 relative to rod 20 thereby changing the overall length of the tibial resector guide 10.

Therefore, the telescoping rod 16 may be used by the surgeon to set the cutting guide in the approximate location for the cut. The length adjustment mechanism may then be used to precisely align the cutting guide 26 with the desired cut line. This precise alignment is possible due to the interplay of the cylindrical body 74, pin 78 and leg 44. The threaded adjustment of the resector length provides for infinite and precise adjustment of the cutting guide 26. In practice, leg 44 may include indicia which may be referenced against the top of cap 72 to provide visual indication of the amount of movement of the leg relative to rod 20. Preferably, the indicia will be spaced in 2mm increments.

The anterior-posterior (A-P) angle of the cutting guide 26 may be altered relative to telescoping rod 16 by adjustment of the slope adjustment mechanism 40. To vary the A-P slope of the cutting guide 26, the surgeon shifts slide 54 relative to fixed body 42 within the dovetail groove 46. As slide 54 is shifted within the groove, screw 66 (accommodated within the angled slot 56 of slide 54) follows slot 54 which translates into a vertical motion within slot 50 of fixed body 42. This vertical movement of screw 66 connected to the distal ends of legs 38 causes the cutting guide 26 to pivot about pivot pin 68 thereby causing a change in the A-P slope of the cutting guide 26 and more importantly, slot 28. As slide 54 is shifted within dovetail groove 46, ball stop 64 seats within each indentation 48 to impart a positive snap feel to the slide. Each indentation corresponds to a particular angular setting of the cutting head as is indicated by indicia on the upper surface of the fixed body as shown in the figures. In the preferred embodiment the indentations correlate to O, 3, 5, 7 and 10 degrees of A-P slope relative to the telescoping rod 16. Since the angles of slope adjustment mechanism 40 are referenced from the telescoping rod it is imperative that the rod be parallel to the tibia.

Once head 12 has been properly adjusted and the cutting guide 26 is in contact with the proximal portion of the tibia, the surgeon may pin the cutting guide 26 in place by placing pins through pinning apertures 36. A cutting blade (not shown) from a powered cutting instrument is inserted into slot 28 and the instrument activated to saw through the tibia at the cut line. As mentioned, the environment of a typical total knee replacement procedure is somewhat cramped with limited space available. Therefore, the cutting guide 26 of the invention is formed with angled side walls 34 as illustrated. The angled side walls present a narrow face of the cutting guide to the surgeon, thus taking up less space, yet provide a full cutting aperture adjacent the tibia. To complete a full cut, the surgeon must follow the angled side walls of the cutting guide 26.

It should be understood that after the surgeon selects the appropriate A-P angle, the position of the cutting guide 26 may need to be longitudinally altered by LAM 70.

It should be understood that the invention is not to be limited to the precise form disclosed but may be modified within the scope of the appended claims.

Claims

1. A resector guide (10) for use in orthopaedic surgery to form a stable cutting surface for a surgical saw blade, said resector guide (10) including a head (12), a cutting guide (26) pivotally carried by said head (12) and including a slot (28), said cutting guide (26) having a posterior aperture and an anterior aperture forming said slot (28), said head (12) further including adjustment means (40) for pivoting said slot (28) in an anterior-posterior direction relative to said head (12), said head (12) being carried by a rod (16, 20, 24) adapted to position said head (12) adjacent an end of a patient's limb, characterised in that said slot (28) accomodates said saw blade, and in that means (70) are carried by said head (12) operatively associated with said rod member (20) for shifting said head (12) in a longitu-

dinal direction relative to said rod (16, 20), said rod (16) further including an alignment device (14) carried at an end opposite said head (12) for contacting a second end of said limb and in that the adjustment means (40) is connected to said cutting guide (26) and includes a fixed body (42) and a slide (54) carried by said body (42), said slide (54) being shiftable along said fixed body (42), said slide (54) being operatively connected to said cutting guide (26) such that as said slide (54) is shifted along said fixed body (42) said cutting guide (26) is shifted to vary the anterior-posterior angle of said slot (28) relative to said rod (16, 20, 24).

2. The resector guide (10) as claimed in claim 1 characterised in that said slide (54) includes a slot (43) therethrough positioned at an incline relative to a longitudinal axis of said slide (54), said cutting guide (26) including a pin member (66) accommodated within said slide slot (43) wherein as said slide (54) is shifted in one direction relative to said fixed body (42) said pin (66) rides upwardly within said slide slot (43) to thereby pivot said cutting guide slot (28) in the anterior-posterior direction.

3. The resector guide (10) as claimed in claim 2 characterised in that said fixed body (42) includes a plurality of recesses (48), said slide (54) carrying a detent (62,64) for consecutively seating within said recesses (48) as said slide (54) is shifted along said fixed body (42).

4. The resector guide (10) as claimed in any preceding claim characterised in that said shifting means (70) includes a cylindrical body (74) rotatably connected to said rod (20), said cylinder (74) including a central threaded bore, said head (12) including a lower depending leg (44) having screw threads thereon, said leg (44) being threadibly accommodated within said central bore such that as said cylinder (74) is rotated in one direction the threadible accommodation causes said leg (44) to shift longitudinally away from said body (74), rotation of said cylindrical body (74) in a second direction draws said leg (44) into said body (74).

5. The resector guide (10) as claimed in claim 4 characterised in that said cylindrical body (74) includes first and second cylinder portions(72, 74) connected together and forming a cavity (76) at their junction, a pin (78) carried by said rod (20) extends outwardly of said rod (20) and is restrictively accommodated within said cavity.

6. The resector guide (10) as claimed in any preceding claim characterised in that the guide (10) includes a pinning means (80) pivotally carried by said head (12) for accommodating a securement device to secure said resector (10) to a bone.

7. The resector guide (10) as claimed in claims 1 and 6 characterised in that said pinning means (80) is operatively associated with said cylindrical body (74) of said shifting means (70) such that said pinning means (80) remains longitudinally fixed relative to said rod (16) and shifting means (70).

8. The resector guide (10) as claimed in any preceding claim characterised in that said anterior aperture of said cutting guide (26) is shorter than said posterior aperture of said cutting guide (26) with said cutting guide having angled side walls (34).

9. The resector guide (10) as claimed in claim 3 characterised in that the fixed body (42) includes a plurality of recesses (48) and said slide (54) carries a shiftable stop member (64) for progressive engagement within each such recess (48) as said slide is shifted between its first and second positions said stop member (64) and said recesses (48) constituting detent means (62,64) for imparting a positive snap feel to said slide (54) as it is shifted relative to said fixed body (42).

10. The resector guide (10) as claimed in claim 9 characterised in that said slide (54) rides in a longitudinal groove of said fixed body (42).

11. A resector guide (10) as claimed in any preceding claim characterised in that the resector guide (10) comprises a mechanism for adjusting the length of resector guide (10), said mechanism comprising first (20) and second (44) rod portions with a transverse bore (21) being formed in one end of said first rod (20) with a pin (78) extending outwardly therefrom, said second rod (44) including screw threads on longitudinal end, said mechanism comprising a cylindrical body (74) rotatably carried by said first rod (20), said cylindrical body (74) including a threaded central bore having first and second diameters,said second diameter of said central bore for threadibly accommodating the threaded end of said second rod (44), a cap (72) having a central bore and being threadibly accommodated by said central bore of said cylindrical body (74) at said first diameter to connect said cap (72) to said cylindrical body (74), said cap (72) and said cylindrical body (74) forming a cavity (76) at their junction in communication with said central bore of said cap (72) and said cylindrical body (74), exposed ends of said pin (78) being positioned within said cavity and constituting means for longitudinally fixing said cylindrical body (74) and said cap (72) to said first rod such that as said cylindrical body (74) is rotated the threaded engagement between said cylindrical body (74) and said second rod (44)causes said

second rod (44) to longitudinally shift relative to said first rod (20).

12. A resector guide (10) as claimed in claim 11 characterised in that the threaded end of said second rod (44) includes a longitudinally aligned slot (43) for accommodating an end of said pin (78), wherein as said second rod (24) is shifted, said pin (78) contacts said slot (43) thereby constituting means for defining the limits of said longitudinal shifting.

Patentansprüche

1. Resektorführung (10) zur Verwendung in der orthopädischen Chirurgie, um eine stabile Schneidfläche für ein chirurgisches Sägeblatt zu bilden, wobei die Resektorführung (10) aufweist: einen Kopf (12), eine Schneidführung (26), die schwenkbar durch den Kopf (12) getragen wird und einen Schlitz (28) aufweist, wobei die Schneidführung (26) eine den Schlitz (28) bildende Posterioröffnung und Anterioröffnung hat, der Kopf (12) ferner eine Einstelleinrichtung (40) zum Schwenken des Schlitzes (28) in Anterior-Posterior-Richtung relativ zu dem Kopf (12) aufweist, der Kopf (12) durch eine Stange (16, 20, 24) getragen wird, die geeignet ist, den Kopf (12) benachbart zu einem Ende einer Extremität eines Patienten zu Positionieren, dadurch gekennzeichnet, daß in dem Schlitz (28) das Sägeblatt untergebracht ist, und dadurch, daß eine funktionell dem Stangenteil (20) zugeordnete Einrichtung (70) durch den Kopf (12) zum Verschieben des Kopfes (12) in Längsrichtung relativ zu der Stange (16, 20) getragen wird, wobei die Stange (16) ferner eine an einem dem Kopf (12) gegenüberliegenden Ende getragene Ausrichtungsvorrichtung (14) zum Berühren eines zweiten Endes der Extremität aufweist, und dadurch, daß die Einstelleinrichtung (40) mit der Schneidführung (26) verbunden ist und einen festen Körper (42) sowie ein durch den Körper (42) getragenes Gleitstück (54) aufweist, wobei das Gleitstück (54) längs dem festen Körper (42) verschiebbar ist, wobei das Gleitstück (54) funktionell mit der Schneidführung (26) so verbunden ist, daß beim Verschieben des Gleitstücks (54) längs dem festen Körper (42) die Schneidführung (26) verschoben wird, um den Anterior-Posterior-Winkel des Schlitzes (28) relativ zu der Stange (16, 20, 24) zu variieren.

2. Resektorführung (10) nach Anspruch 1, dadurch gekennzeichnet, daß das Gleitstück (54) einen durchgehenden Schlitz (43) aufweist, der in einer Neigung relativ zu einer Längsachse des Gleitstücks (54) positioniert ist, wobei die Schneidführung (26) ein in dem Gleitstückschlitz (43) untergebrachtes Bolzenteil (66) aufweist, wobei beim Verschieben des Gleitstücks (54) in eine Richtung relativ zu dem festen Körper (42) der Bolzen (66) in dem Gleitstückschlitz (43) nach oben fährt, um dadurch den Schneidführungsschlitz (28) in Anterior-Posterior-Richtung zu schwenken.

3. Resektorführung (10) nach Anspruch 2, dadurch gekennzeichnet, daß der feste Körper (42) mehrere Aussparungen (48) aufweist, wobei das Gleitstück (54) eine Arretierung (62, 64) zum aufeinanderfolgenden Sitzeinpassen in die Aussparungen (48) aufweist, wenn das Gleitstück (54) längs dem festen Körper (42) verschoben wird.

4. Resektorführung (10) nach einem der vorstehenden Ansprüche, dadurch gekennzeichnet, daß die Verschiebungseinrichtung (70) einen drehbar mit der Stange (20) verbundenen zylindrischen Körper (74) aufweist, wobei der Zylinder (74) eine mittlere Gewindebohrung aufweist, der Kopf (12) einen unteren herabhängenden Schenkel (44) mit Schraubengewindegängen daran aufweist, der Schenkel (44) in der Mittelbohrung so schraubbar untergebracht ist, daß beim Drehen des Zylinders (74) in eine Richtung die schraubbare Unterbringung bewirkt, daß sich der Schenkel (44) von dem Körper (74) längs wegschiebt, und eine Drehung des zylindrischen Körpers (74) in eine zweite Richtung den Schenkel (44) in den Körper (74) zieht.

5. Resektorführung (10) nach Anspruch 4, dadurch gekennzeichnet, daß der zylindrische Körper (74) einen ersten und zweiten Zylinderabschnitt (72, 74) aufweist, die miteinander verbunden sind und einen Hohlraum (76) an ihrer Verbindungsstelle bilden, wobei sich ein durch die Stange (20) getragener Bolzen (78) von der Stange (20) nach außen erstreckt und zwangsgeführt in dem Hohlraum untergebracht ist.

6. Resektorführung (10) nach einem der vorstehenden Ansprüche, dadurch gekennzeichnet, daß die Führung (10) eine durch den Kopf (12) schwenkbar getragene Bolzungseinrichtung (80) zum Unterbringen einer Befestigungsvorrichtung aufweist, um den Resektor (10) an einem Knochen zu befestigen.

7. Resektorführung (10) nach Anspruch 1 und 6, dadurch gekennzeichnet, daß die Bolzungseinrichtung (80) dem zylindrischen Körper (74) der Verschiebungseinrichtung (70) so funktionell zugeordnet ist, daß die Bolzungseinrichtung (80) relativ zu der Stange (16) und der Verschiebungseinrichtung (70) längs feststehend bleibt.

8. Resektorführung (10) nach einem der vorstehenden Ansprüche, dadurch gekennzeichnet, daß die Anterioröffnung der Schneidführung (26) kürzer als

die Posterioröffnung der Schneidführung (26) ist, wobei die Schneidführung abgewinkelte Seitenwände (34) hat.

9. Resektorführung (10) nach Anspruch nach Anspruch 3, dadurch gekennzeichnet, daß der feste Körper (42) mehrere Aussparungen (48) aufweist und das Gleitstück (54) ein verschiebbares Anschlagteil (64) zum schrittweisen Eingriff in jede derartige Aussparung (48) trägt, wenn das Gleitstück zwischen seiner ersten und zweiten Position verschoben wird, wobei das Anschlagteil (64) und die Aussparungen (48) eine Arretiereinrichtung (62, 64) bilden, um dem Gleitstück (54) ein sicheres Einrastgefühl zu verleihen, wenn es relativ zu dem festen Körper (42) verschoben wird.

10. Resektorführung (10) nach Anspruch 9, dadurch gekennzeichnet, daß das Gleitstück (54) in einer Längsnut des festen Körpers (42) läuft.

11. Resektorführung (10) nach einem der vorstehenden Ansprüche, dadurch gekennzeichnet, daß die Resektorführung (10) einen Mechanismus zum Einstellen der Länge der Resektorführung (10) aufweist, wobei der Mechanismus einen ersten (20) und zweiten (44) Stangenabschnitt aufweist, eine Querbohrung (21) in einem Ende der ersten Stange (20) gebildet ist, sich ein Bolzen (78) aus ihr nach außen erstreckt, die zweite Stange (44) Schraubengewindegänge an einem Längsende aufweist, wobei der Mechanismus aufweist: einen zylindrischen Körper (74), der drehbar durch die erste Stange (20) getragen wird, wobei der zylindrische Körper (74) eine gewindete Mittelbohrung mit einem ersten und zweiten Durchmesser aufweist, wobei der zweite Durchmesser der Mittelbohrung zum schraubbaren Unterbringen des gewindeten Endes der zweiten Stange (44) dient, eine Kappe (72), die eine Mittelbohrung hat und schraubbar durch die Mittelbohrung des zylindrischen Körpers (74) an dem ersten Durchmesser untergebracht ist, um die Kappe (72) mit dem zylindrischen Körper (74) zu verbinden, wobei die Kappe (72) und der zylindrische Körper (74) einen Hohlraum (76) an ihrer Verbindungsstelle in Verbindung mit der Mittelbohrung der Kappe (72) und des zylindrischen Körpers (74) bilden, freiliegende Enden des Bozens (78) in dem Hohlraum positioniert sind und eine Einrichtung zum Längsfixieren des zylindrischen Körpers (74) und der Kappe (72) an der ersten Stange so bilden, daß beim Drehen des zylindrischen Körpers (74) der Gewindeeingriff zwischen dem zylindrischen Körper (74) und der zweiten Stange (44) bewirkt, daß sich die zweite Stange (44) relativ zu der ersten Stange (20) längs verschiebt.

12. Resektorführung (10) nach Anspruch 11, dadurch gekennzeichnet, daß das Gewindeende der zweiten Stange (44) einen längs ausgerichteten Schlitz (43) zum Unterbringen eines Endes des Bolzens (78) aufweist, wobei beim Verschieben der zweiten Stange (44) der Bolzen (78) den Schlitz (43) berührt, wodurch eine Einrichtung zum Festlegen der Grenzen der Längsverschiebung gebildet ist.

Revendications

1. Guide de résecteur (10) destiné à être utilisé en chirurgie orthopédique pour former une surface de coupe stable pour une lame de scie chirurgicale, ledit guide de résecteur (10) incluant une tête (12), un guide coupant (26) porté de manière pivotante par ladite tête (12) et incluant une fente (28), ledit guide coupant (26) ayant une ouverture postérieure et une ouverture antérieure formant ladite fente (28), ladite tête (12) incluant en outre un moyen d'ajustement (30) pour faire pivoter ladite fente (28) dans une direction antérieure-postérieure relativement à ladite tête (12), ladite tête (12) étant portée par une tige (16, 20, 24) adaptée pour positionner ladite tête (12) pour qu'elle soit adjacente à une extrémité d'un membre du patient, caractérisé en ce que ladite fente (28) loge ladite lame de scie, et en ce que des moyens (70) sont portés par ladite tête (12) fonctionnellement associés audit élément de tige (20) pour déplacer ladite tête (12) dans une direction longitudinale relativement à ladite tige (16, 20), ladite tige (16) incluant en outre un dispositif d'alignement (14) porté à une extrémité opposée à ladite tête (12) pour venir en contact avec une deuxième extrémité dudit membre et en ce que le moyen d'ajustement (40) est relié audit guide coupant (26) et comporte un corps fixe (42) et un coulisseau (54) porté par ledit corps (42) ledit coulisseau (54) étant déplaçable le long dudit corps fixe (42), ledit coulisseau (54) étant fonctionnellement relié audit guide coupant (26) de façon que lorsque ledit coulisseau (54) est déplacé le long dudit corps fixe (42), ledit guide coupant (26) est déplacé pour faire varier l'angle antérieur-postérieur de ladite fente (28) relativement à ladite tige (16, 20,24).

2. Guide de résecteur (10) selon la revendication 1, caractérisé en ce que ledit coulisseau (54) comporte une fente (43) à travers celui-ci positionnée suivant une inclinaison relativement à un axe longitudinal dudit coulisseau (54), ledit guide coupant (26) incluant un élément d'axe (66) logé dans ladite fente de coulisseau (43) où, lorsque ledit coulisseau (54) est déplacé dans une direction relativement audit corps fixe (42), ledit axe (66) se déplace vers le haut dans ladite fente de coulisseau (43) pour faire pivoter ainsi ladite fente de guide coupant

(28) dans la direction antérieure-postérieure.

3. Guide de résecteur (10) selon la revendication 2, caractérisé en ce que ledit corps fixe (42) comporte plusieurs évidements (48), ledit coulisseau (54) portant un positionneur (62, 64) pour se loger consécutivement dans lesdits évidements (48) lorsque ledit coulisseau (54) est déplacé le long dudit corps fixe (42).

4. Guide de résecteur (10) selon l'une des revendications précédentes, caractérisé en ce que ledit moyen de déplacement (70) comporte un corps cylindrique (74) relié de manière rotative à ladite tige (20), ledit cylindre (74) incluant un perçage fileté central, ladite tête (12) incluant une branche inférieure s'étendant vers le bas (44) ayant des filets de vis sur celle-ci, ladite branche (44) étant reçue par vissage dans ledit perçage central de façon que lorsque ledit cylindre (74) est entraîné en rotation dans une direction, le logement fileté amène ladite branche (44) à se déplacer longitudinalement au loin dudit corps (74), et la rotation dudit corps cylindrique (74) dans une deuxième direction tire ladite branche (44) dans ledit corps (74).

5. Guide de résecteur (10) selon la revendication 4, caractérisé en ce que ledit corps cylindrique (74) comporte des première et deuxième portions cylindriques (72, 74) reliées ensemble et formant une cavité (76) à leur jonction, un axe (78) porté par ladite tige (20) s'étend vers l'extérieur de ladite tige (20) et est logé de manière restrictive dans ladite cavité.

6. Guide de résecteur (10) selon l'une des revendications précédentes, caractérisé en ce que le guide (10) comporte un moyen d'enclouage (80) porté de manière pivotante par ladite tête (12) pour recevoir un dispositif de fixation pour fixer ledit résecteur (10) à un os.

7. Guide de résecteur (10) selon l'une des revendications 1 et 6, caractérisé en ce que ledit moyen d'enclouage (80) est fonctionnellement associé audit corps cylindrique (74) dudit moyen de déplacement (70) de façon que ledit moyen d'enclouage (80) reste longitudinalement fixé relativement à ladite tige (16) et au moyen de déplacement (70).

8. Guide de résecteur (10) selon l'une des revendications précédentes, caractérisé en ce que ladite ouverture antérieure dudit guide de coupe (26) est plus courte que ladite ouverture postérieure dudit guide coupant (26), ledit guide coupant ayant des parois latérales angulaires (34).

9. Guide de résecteur (10) selon la revendication 3, caractérisé en ce que le corps fixe (42) comporte plusieurs évidements (48) et que ledit coulisseau (54) porte un élément d'arrêt déplaçable (64) en vue d'une mise en prise progressive avec chacun des ces évidements (48) lorsque ledit coulisseau est déplacé entre ces première et deuxième positions, ledit élément d'arrêt (64) et lesdits évidements (48) constituant un moyen de positionnement (62, 64) pour donner une sensation d'enclenchement positif audit coulisseau (54) lorsqu'il est déplacé relativement audit corps fixe (42).

10. Guide de résecteur (10) selon la revendication 9, caractérisé en ce que ledit coulisseau (54) se déplace dans une rainure longitudinale dudit corps fixe (42).

11. Guide de résecteur (10) selon l'une des revendications précédentes, caractérisé en ce que le guide de résecteur (10) comprend un mécanisme pour ajuster la longueur du guide de résecteur (10), ledit mécanisme comprenant des première (20) et deuxième (44) parties de tige avec un perçage transversal (21) ménagé dans une extrémité de ladite première tige (20), un axe (78) s'étendant vers l'extérieur depuis celui-ci, ladite deuxième tige (44) incluant des filetages de vis sur une extrémité longitudinale, ledit mécanisme comprenant un corps cylindrique (74) porté de manière rotative par ladite première tige (20), ledit corps cylindrique (74) incluant un perçage central fileté avec des premier et deuxième diamètres, ledit deuxième diamètre dudit perçage central étant prévu pour recevoir par vissage l'extrémité filetée de ladite deuxième tige (44), un capuchon (72) avec un perçage central et reçu par vissage dans ledit perçage central dudit corps cylindrique (74) audit premier diamètre pour relier ledit capuchon (72) audit corps cylindrique (74), ledit capuchon (72) et ledit corps cylindrique (74) formant une cavité (76) à leur jonction en communication avec ledit perçage central dudit capuchon (72) et ledit corps cylindrique (74), des extrémités exposées dudit axe (78) étant positionnées dans ladite cavité et constituant un moyen pour fixer longitudinalement ledit corps cylindrique (74) et ledit capucnon (72) à ladite première tige de façon que lorsque ledit corps cylindrique (74) est amené à tourner, l'engagement par vissage entre ledit corps cylindrique (74) et ladite deuxième tige (44) amène ladite deuxième tige (44) à se déplacer longitudinalement relativement à ladite première tige (20).

12. Guide de résecteur (10) selon la revendication 11, caractérisé en ce que l'extrémité filetée de ladite deuxième tige (44) présente une fente (43) alignée

longitudinalement pour recevoir une extrémité dudit axe (78), où lorsque ladite deuxième tige (24) est déplacée, ledit axe (78) vient en contact avec ladite fente (43) en constituant ainsi un moyen pour définir les limites dudit déplacement longitudinal.

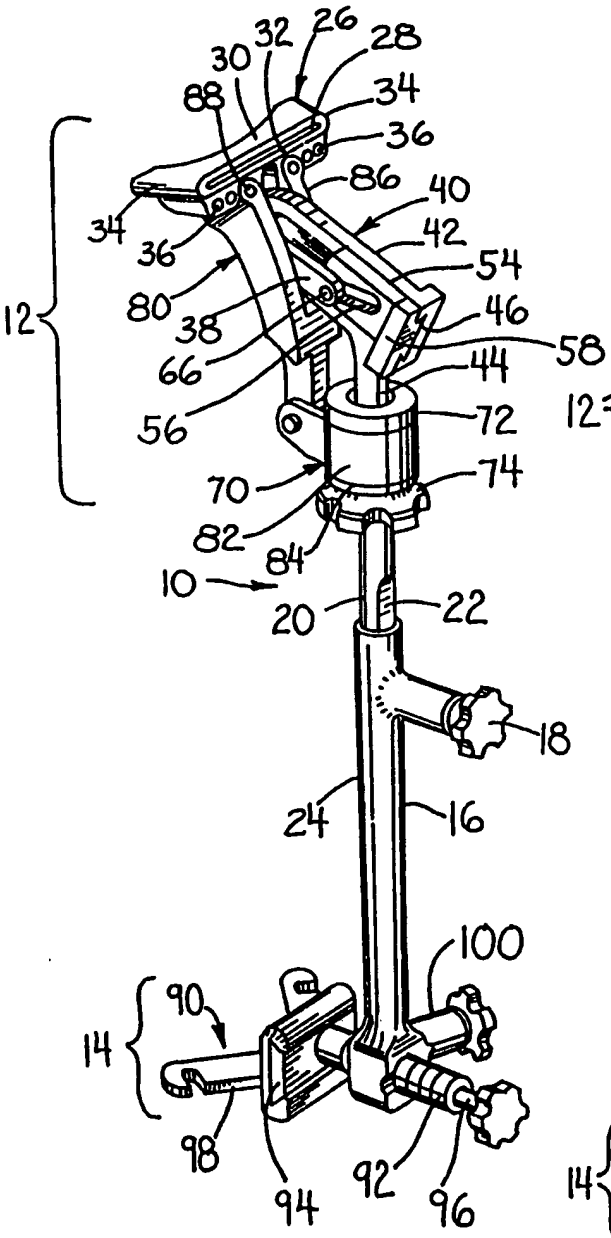
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Fig. 1

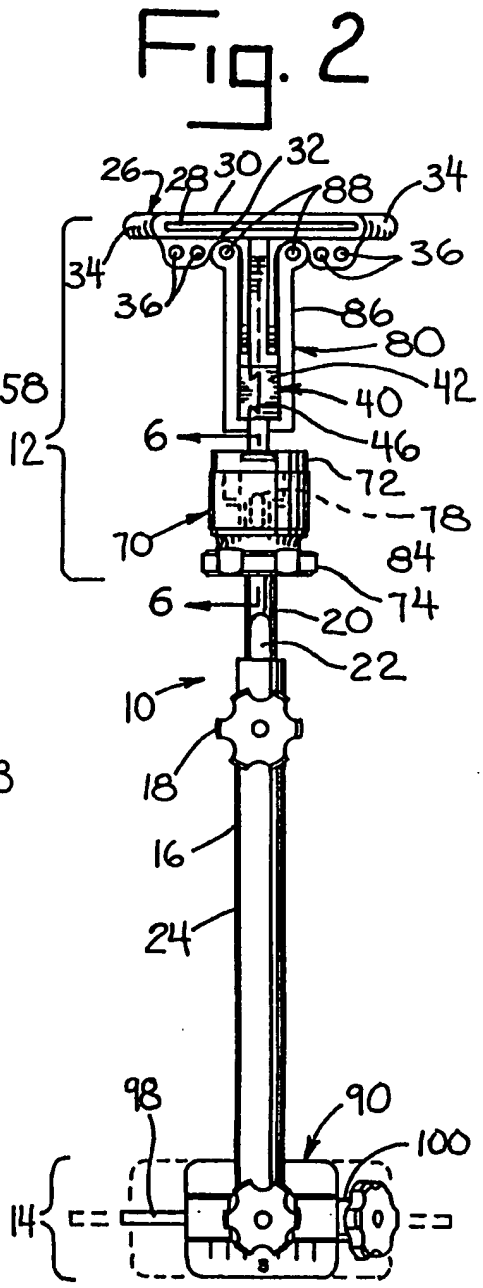
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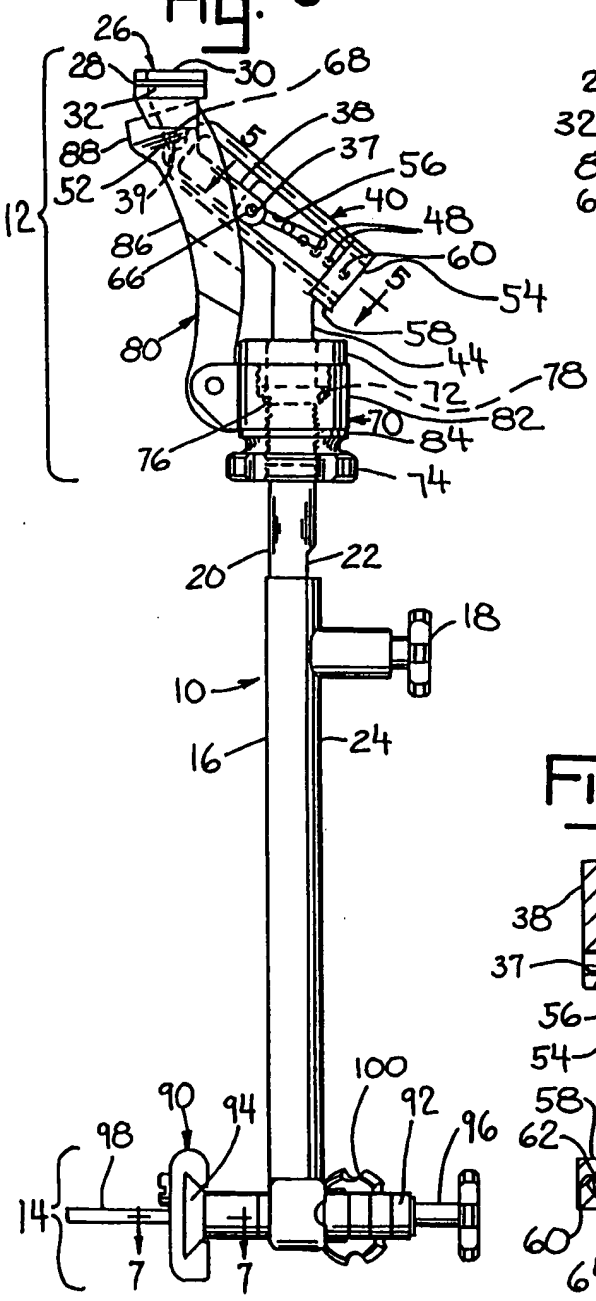
Fig. 2

Fig. 3



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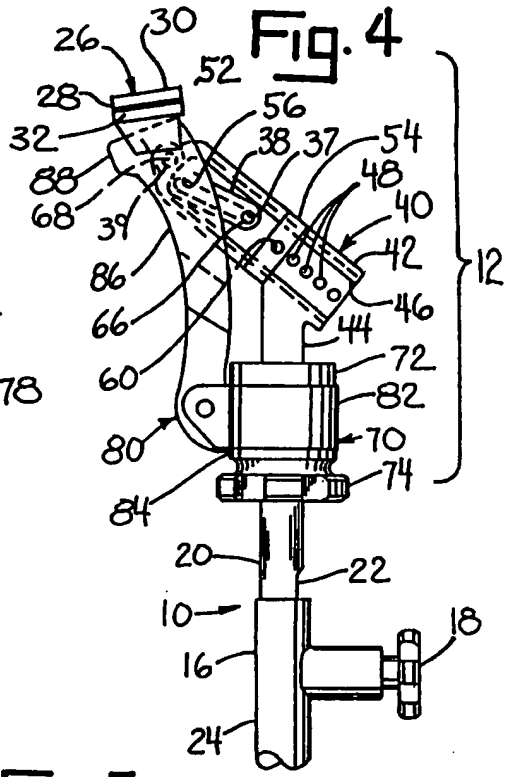

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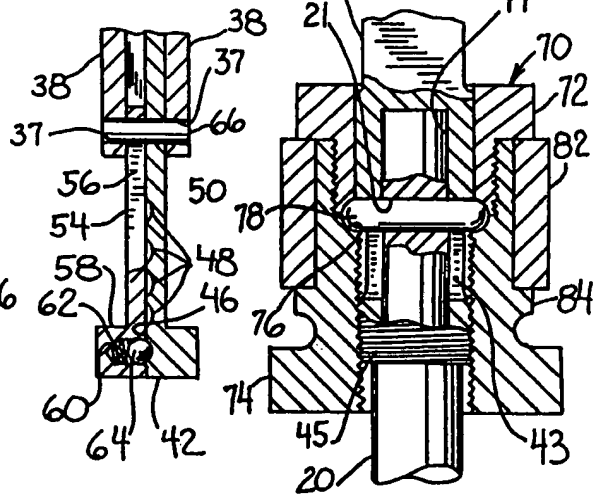

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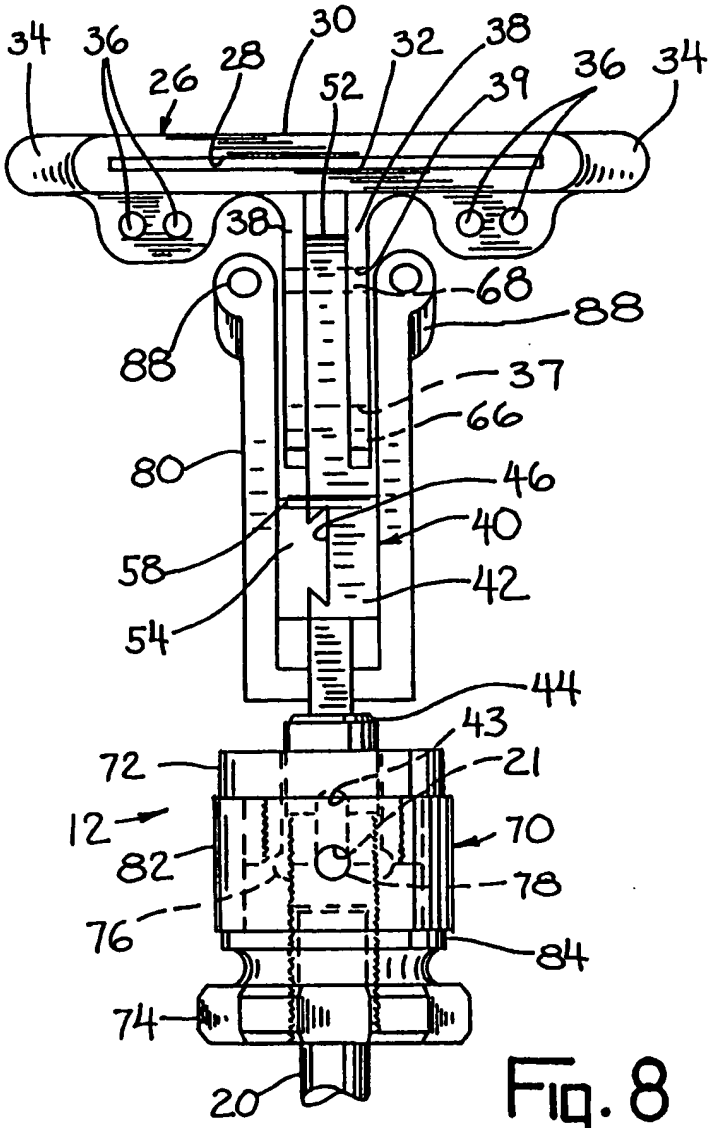
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Fig. 8

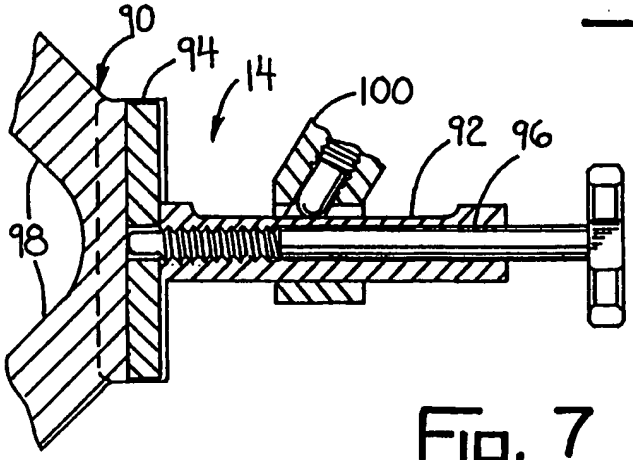
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Fig. 7

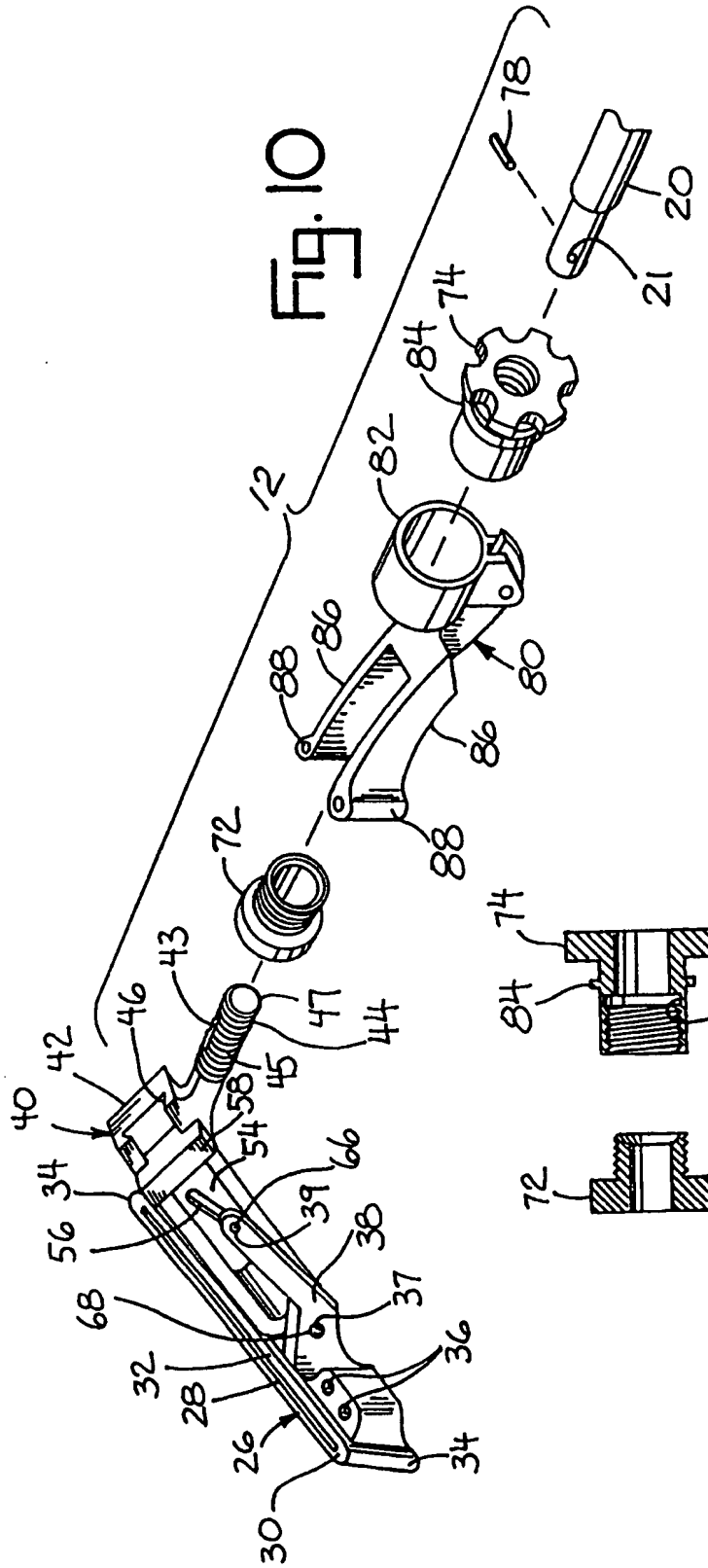
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Fig. 10

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Fig. 9